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10/696,444	10/29/2003	Georg Michelitsch	282729US8X	6782

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EXAMINER	
MOON, SEOKYUN	
ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/696,444	MICHELITSCH ET AL.	
	Examiner	Art Unit	
	SEOKYUN MOON	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. The Applicant's arguments filed on February 06, 2008 have been fully considered.

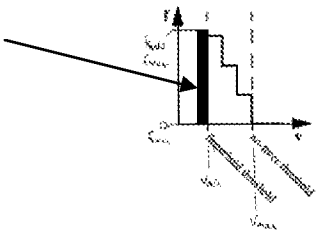
Response to Drawing Objection

The Applicant [Remark: pg 8 4th paragraph] explained that the hold force, i.e. fhold or fmax, shown on figures 1a-1c is a value higher than any of the forces within the range between the interval Vmin and Vmax and thus the feature of claim 18, "*the predetermined hold force value being larger than the interaction feedback force within said inverted damping operation mode*" is well presented in the figures of the instant Application. The Examiner agrees with the Applicant's assertion that figures 1a-1c of the instant Application teaches the above disclosed claim limitation.

The Applicant [Remark: pg 8 5th paragraph] further explained, "*to be consistent with the specification and Applicant's Figures, fhold and fmax are marked on the ordinate of Figs. 1a-1c, and are not drawn as a bold line between 0 to Vmin of the abscissa, because fhold and fmax are substantially constant values that do not depend on different velocities in the range from 0 to Vmin*". However, the Examiner respectfully submits that the drawing objection made in the previous Office action was not based on the issue of drawing the applied force as a bold line or not, but was based on the issue of having a discontinuous region of the applied force in the graph. Specifically, claim 18 presented previously discloses, "*an absolute value of the interaction force or a vectorial component thereof is increased in a position dependent form to a predetermined hold force value or above, if the respective velocity or a vectorial component thereof decreases below a given threshold minimum velocity value*". However, figures 1a-1c of the instant Application show that no force exists in a certain range (the black region shown on drawing 1, which is equivalent to figure 1a of the instant Application) between 0 and Vmin. Thus, contrary to the feature disclosed in claims 18 and 35, the figures of the instant Application show

that, the absolute value of the interaction force is not increased to a predetermined hold force value or above even when the respective velocity decreases below a given threshold minimum velocity value. In other words, even though the black region is the region where the respective velocity decreases below a given threshold minimum velocity value, the absolute value of the interaction force is not increased to a predetermined hold force value or above.

No force is applied or exerted.



Drawing 1

Accordingly, the Examiner respectfully submits that the objection to the drawings is maintained in this Office action.

Appropriate correction/explanation is required.

Response to the rejection of claims 18 and 35 under 35 U.S.C. 102 (b)

The Applicant [Remark: pg 10 3rd paragraph and pg 11 1st paragraph] pointed out that the prior art of record (US 2002/0109668, herein after "*Rosenberg*") fails to teach the claim limitation, "*the predetermined hold force value being larger than the interaction feedback force within said inverted damping operation mode*", since as shown in fig. 5c of Rosenberg, the feedback force at velocity V1 in section 324 is same as the feedback force in section 322.

Examiner respectfully disagrees.

As clearly explained in the previous Office action, the Examiner interpreted the mode of the haptic device of Rosenberg operated within the range of the velocity of $V1 < v < V2$ as the disclosed inverted damping operation mode and the mode of the haptic device of Rosenberg operated within the range of the velocity of $0 < v < V1$ as the holding force mode. Since, in the device of Rosenberg, the

value of the force gain within the range of velocity of $0 < v < V1$ is always greater than the value of the force gain within the range of the velocity of $0 < v < V1$, Rosenberg does teach the claim limitation, "*the predetermined hold force value being larger than the interaction feedback force within said inverted damping operation mode*" (note that the mode in which the haptic device is operated at the velocity V1 was not construed as the inverted damping operation mode).

Accordingly, the Examiner respectfully submits that the Applicant's arguments regarding the rejection of claims 18 and 35 are not persuasive.

The Applicant [Remark: pg 11 2nd and 3rd paragraph] further pointed out that Rosenberg fails to teach the feature disclosed in claims 27, 35, and 36, a piecewise positive and monotonically decreasing function that is one of a step function and a staircase function since figures 5a-5c of Rosenberg merely shows a linear function and no step function or staircase function are shown.

However, the Examiner respectfully submits that Rosenberg further teaches a concept of replacing the function shown in the figure with a multi-step function [par. (0012) lines 14-16].

Accordingly, the Examiner respectfully submits that the Applicant's arguments regarding claims 27, 35, and 36 are not persuasive.

Remark

2. Previously presented claim 33 is newly rejected under 35 U.S.C. 101 in this correspondence.

Accordingly, this Office action is made Non-Final.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation, "*an absolute force value of the interaction feedback force or a vectorial component thereof is increased in a position dependent form,* ***to a predetermined hold force value or above****, if the respective velocity or a vectorial component thereof*

decreases ***below a given threshold minimum velocity value***", disclosed in claims 18 and 35 must be shown or the feature(s) canceled from the claim(s). Specifically, in figure 1, Vmin is defined as the threshold minimum velocity value. However, within a certain sub-range of the range of the velocity between 0 and Vmin, the interaction feedback force does not exist. In other words, within the sub-range, the interaction feedback force is not increased to a predetermined hold force value, even though the respective velocity is below the threshold minimum velocity value.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. **Claim 33** is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

According to pages 53-55 of the Interim Guidelines (emphasis on pg 53 last two lines - pg 54 first paragraph), a claim for a computer program without a computer-readable medium needed to realize the computer program's functionality is considered non-statutory functional descriptive material. Since claim 33 discloses a computer program product without disclosing a computer-readable medium needed to realize the method for operating a haptic interface unit, the claim is considered non-statutory.

Appropriate correction/explanation is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 18-36** are rejected under 35 U.S.C. 102(b) as being anticipated by Rosenberg (US 2002/0109668).

As to **claim 18**, Rosenberg teaches a method for operating a haptic interface unit ("*interface device*") [par. (0012) lines 4-8 and par. (0025) lines 8-15], comprising:

receiving at least velocity information data with respect to at least one haptic device [par. (0076) lines 8-11];

generating interaction feedback force data ("*haptic effect*") based on and in dependence of at least the velocity information data [par. (0077) lines 7-13], the interaction feedback force data being representative for an interaction feedback force to be generated by the at least one haptic device [par. (0012) lines 8-12];

transmitting the interaction feedback force data to the at least one haptic device so as to generate the interaction feedback force [fig. 1];

providing an inverted damping operation mode [fig. 5c: the mode of the haptic device operated within the range of the velocity of $V1 < v < V2$ and par. (0012); replacing the linear function of fig. 5c with a step function] in which the interaction feedback force data are at least partly generated to be representative for an interaction feedback force which increases with a decreasing velocity and the interaction feedback force data are at least partly generated to be representative for an interaction feedback force which decreases with an increasing velocity, wherein the velocity is with respect to a respective haptic device or a pointing unit thereof; and

providing a holding force mode [fig. 5c: the mode of the haptic device operated within the range of the velocity of $0 < v < V1$] in which an absolute force value of the interaction feedback force or a vectorial component thereof is increased in a position dependent form [par. (0052)] to a predetermined hold force value or above ("*I*"), if the respective velocity or a vectorial component thereof decreases below a given threshold minimum velocity value ("V1"), the predetermined hold force value being larger than the interaction feedback force within the inverted damping operation mode.

As to **claim 19**, Rosenberg teaches the method comprising decreasing the absolute force value of the interaction feedback force or a vectorial component thereof to zero, if the respective velocity or a vectorial component thereof increases above a given threshold maximum velocity value [claim 26].

As to **claim 20**, Rosenberg teaches the method comprising performing the inverted damping operation mode with respect to vectorial components of the interaction feedback force and the velocity [par. (0075)].

As to **claim 21**, Rosenberg teaches the method comprising performing the inverted damping operation mode [fig. 5c: the mode of the haptic device operated within the range of the velocity of $0 < v < V1$] with respect to vectorial components of the interaction feedback force and the velocity in an independent manner (only the scale of the velocity matters to determine the magnitude of the force).

As to **claim 22**, Rosenberg [fig. 5c] teaches the method comprising generating the interaction feedback force data to describe the interaction feedback force as a damping force, so as to generate an interaction feedback force acting against a given velocity or a vectorial component thereof [par. (0079) lines 11-18].

As to **claim 23**, Rosenberg [fig. 5c] teaches the method comprising generating the interaction feedback force data to describe the interaction feedback force as a damping force, so as to generate an interaction feedback force acting against a given velocity or a vectorial component thereof as a counterforce or a frictional force [par. (0079) lines 11-18].

As to **claim 24**, Rosenberg [fig. 5c] teaches the method comprising generating the interaction feedback force data to describe the interaction feedback force or a vertical component thereof as having an absolute force value f being, at least piecewise, a positive monotonically decreasing function g of the respective velocity v or of a vectorial component thereof to fulfill the relation $f(v) \propto g(v)$.

As to **claim 25**, Rosenberg [fig. 5c] teaches the method comprising selecting the at least piecewise positive and monotonically decreasing function g to fulfill at least piecewise the relation $g(v) = 1 / h(v)$ [claim 27], where h is at least piecewise a positive and monotonically increasing function of the velocity v or of a vectorial component thereof.

As to **claim 26**, Rosenberg [fig. 5c] teaches the method further comprising selecting the at least piecewise positive and monotonically decreasing function g to fulfill at least piecewise the relation $g(v) = 1 / |v|$ [claim 27], where v denotes a velocity or vectorial component thereof.

As to **claim 27**, Rosenberg [fig. 5a] teaches the method comprising selecting the at least piecewise positive and monotonically decreasing function g to be at least piecewise one of a step function and a staircase function..

As to **claim 28**, Rosenberg [par. (0052)] teaches the method comprising generating the interaction feedback force data to describe the interaction feedback force as a force which is at least piecewise dependent on a scalar position or a vector position.

As to **claim 29**, Rosenberg [par. (0052)] teaches the method comprising selecting the scalar position or vector position to describe a position of a respective haptic device or the pointing unit.

As to **claim 30**, Rosenberg [par. (0052)] teaches the method comprising selecting the scalar position or vector position to describe a position of a corresponding abstract pointing means within a data structure.

As to **claim 31**, Rosenberg [par. (0052)] teaches the method comprising selecting the scalar position or vector position to describe a position of a corresponding abstract pointing means within a graphical user interface.

As to **claim 32**, Rosenberg teaches a haptic interface unit comprising means for performing the disclosed operating method and the steps thereof [abstract].

As to **claim 33**, Rosenberg teaches a computer program product, comprising computer program means adapted to perform the method and the steps for operating a haptic interface unit when it is executed on a computer or a digital signal processing means [par. (0027) lines 1-8].

As to **claim 34**, Rosenberg teaches a computer readable storage medium, comprising the disclosed computer program product [par. (0048)].

As to **claim 35**, Rosenberg teaches a method for operating a haptic interface unit ("*interface device*") [par. (0012) lines 4-8 and par. (0025) lines 8-15], comprising:

receiving at least velocity information data with respect to at least one haptic device [par. (0076) lines 8-11];

generating interaction feedback force data ("*haptic effect*") based on and in dependence of at least the velocity information data [par. (0077) lines 7-13], the interaction feedback force data being

representative for an interaction feedback force to be generated by the at least one haptic device [par. (0012) lines 8-12];

transmitting the interaction feedback force data to the at least one haptic device so as to generate the interaction feedback force [fig. 1];

providing an inverted damping operation mode [figs. 5b and 5c: the mode of the haptic device operated within the range of the velocity of $V1 < v < V2$] in which the interaction feedback force data are at least partly generated to be representative for an interaction feedback force which increases with a decreasing velocity and the interaction feedback force data are at least partly generated to be representative for an interaction feedback force which decreases with an increasing velocity, wherein the velocity is with respect to a respective haptic device or a pointing unit thereof; and

providing a holding force mode [figs. 5b and 5c: the mode of the haptic device operated within the range of the velocity of $0 < v < V1$] in which an absolute force value of the interaction feedback force or a vectorial component thereof is increased in a position dependent form, in a step fashion [par. (0012) lines 12-16], to a predetermined hold force value or above, if the respective velocity or a vectorial component thereof decreases below a given threshold minimum velocity value ("*VI*"), the predetermined hold force value being larger than the interaction feedback force within the inverted damping operation mode.

As to **claim 36**, all of the claim limitations have already been discussed with respect to the rejection of claims 24 and 27.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEOKYUN MOON whose telephone number is (571)272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

May 27, 2008
/S. M./
Examiner, Art Unit 2629

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629